



Reactive adducts of vinylidioxo compounds

Description of Technology: This invention relates to reactive adducts of certain vinylidioxo compounds and to curable coating compositions comprising such reactive adducts.

Patent Listing:

1. **US Patent No. 5,932,667**, Issued August 3, 1999, "Reactive adducts of vinylidioxo compounds"

<http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F5932667>

Market Potential: Vinylidioxo compounds also referred to herein as VDO compounds) are well known and certain members of the class have been disclosed as polyester curing agents in U.S. Pat. No. 3,291,860. All are cyclic acetals, extensively studied and patented by Ikeda (U.S. Pat. Nos. 3,010,918; 3,010,923; 3,197,484), by Brachman (U.S. Pat. No. 3,014,924), and by others and described in detail by Hochberg (JOCCA 48, 11, 1043-1068, 1965). The simplest compounds in this class are made by a reaction of acrolein with a compound having two hydroxyl groups, either on adjacent carbon atoms or on carbon atoms separated by an additional carbon atom. When more than two hydroxyl groups are present in a compound, different pairs of hydroxyl groups can react with the aldehyde to form a cyclic acetal. Typical compounds having at least two hydroxyl groups include, for example, ethylene glycol, glycerin, 1,2,6-hexanetriol, and trimethylolpropane. Depending on the number and type of hydroxyl groups, the resulting VDO can be either a substituted 1,3-dioxolane or a substituted 1,3-dioxane, but frequently it is a mixture of a dioxolane with a dioxane. The reaction of acrolein (1) with trimethylolpropane (2) is shown below in Equation 1. The formation of VDO compounds, like other acetal-forming reactions, is catalyzed by acids. ##STR1##

Benefits:

- Pigmented and clear-coat finishes in automotive and other applications.

Applications:

- Polyester curing agents

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